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April 28, 2006

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station
Boston, MA 02110

Re: NSTAR Electric/NSTAR Gas, D.T.E. 05-85

Dear Ms. Cottrell:

Paragraph 2.27 of the Settlement Agreement approved by the Department of Telecommunications and Energy's (the "Department") on December 30, 2005, in the above-referenced matter, requires Boston Edison Company ("Boston Edison"), Cambridge Electric Light Company ("Cambridge") and Commonwealth Electric Company ("Commonwealth") (together, "NSTAR Electric" or the "Companies") to engage a third party

> to conduct an audit NSTAR Electric's annual reporting of System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI"). As part of such audit, the auditor shall assist in the establishment of proxies for certain monthly SAIDI/SAIFI historical data not available on the Cambridge system for ten months during the period from 1995 through 2005, which shall be used to calculate the SAIDI/SAIFI benchmark for performance beginning in 2005.

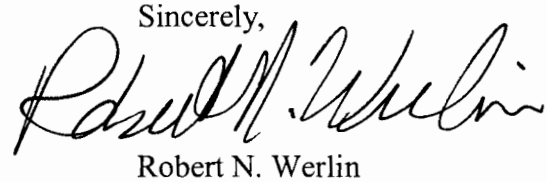
(Settlement Agreement at ¶ 2.27). The auditor has not completed the entire audit, but has developed proxies for 10 months of historical data for the Cambridge system.

In order to be able to file 2005 Annual Service Quality Report ("ASQR") for Cambridge, NSTAR Electric asked the auditor to prepare a separate report dealing solely with the Cambridge establishment of the proxy data. Accordingly, enclosed for filing is a copy of that report, upon which the SAIDI/SAIFI portion of Cambridge's ASQR is based. The ASQR is being filed under separate cover.

Please note that the Cambridge proxy data is filed without prejudice to any findings with respect to the overall audit of NSTAR Electric's annual reporting of SAIDI/.SAIFI data.

Thank you for your attention to this matter.

Sincerely,



Robert N. Werlin

Enclosure

cc: Service List

Revision of SAIDI and SAIFI Benchmarks For Cambridge Electric Light Company for the Service Quality Program of the Massachusetts Department of Telecommunications and Energy

April 28, 2006

Prepared by
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Background of the Study

This proposed revision of the benchmarks for NSTAR's subsidiary, Cambridge Electric Light Company, was undertaken in conjunction with an audit of the 2005 SQI process for reporting SAIDI and SAIFI. As of this writing, that report is still in draft form. Additional background on the study, including data obtained, individuals interviewed, and dates of the work can be found there.

This study was undertaken by NSTAR as part of a Settlement Agreement approved by the Department of Telecommunications and Energy (the "DTE") in D.T.E. 05-85, to conduct an audit and validate NSTAR Electric's 2005 annual reporting of System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI") for NSTAR's three electric distribution companies (Boston Edison, Commonwealth Electric and Cambridge Electric) for the calendar year 2005. In addition, the auditor was to assist in the establishment of proxies for certain months in the three-year period 1999 – 2001 for SAIDI/SAIFI historical data not available for the Cambridge Electric system. These proxies shall be used to calculate the SAIDI/SAIFI benchmark for performance. Specifically, paragraph 2.27 of the Settlement Agreement approved in D.T.E. 05-85 states as follows:

> "The Settling Parties agree that NSTAR Electric shall engage, within ninety (90) days of the effective date of the Settlement Agreement, a third party acceptable to the Attorney General to conduct an audit of NSTAR Electric's annual reporting of System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI"). As part of such audit, the auditor shall assist in the establishment of proxies for certain monthly SAIDI/SAIFI historical data not available on the Cambridge system for ten months during the period from 1995 through 2005, which shall be used to calculate the SAIDI/SAIFI benchmark for performance beginning in 2005. In consideration of the correction to the Cambridge historical data, NSTAR Electric shall establish updated performance benchmarks for SAIDI/SAIFI metrics on the Boston Edison, Commonwealth and Cambridge systems for the 2006 performance year and subsequent. The updated SAIDI/SAIFI benchmarks will be based on the most recent 10 years of historical data (1996 – 2005)."

The Cambridge Electric Light System

The electric distribution system for NSTAR's Cambridge Electric Light Company territory is typical of an 'early urban' system (recent growth of the system having been basically appended on the original system), i.e., with these attributes:

- Over half of the system is underground in ducted cable (Of the 348 miles of distribution primary, 291 miles are underground)

- Approximately 9 percent of its customers are served by secondary networks, such as serve the downtown areas of many major cities
- Its overhead system primary voltage is mainly 4160Y/ 2400 volts ('4kV', or '5kV-class'), which was the original primary distribution voltage for AC systems
- It has a large amount of secondary line, typical of neighborhoods that serve small row houses from secondary racks (147 miles of overhead secondary, versus 58 miles of overhead primary)
- It originally had not much fusing, depending mainly on the feeder circuit breakers for fault interruption (recent efforts by NSTAR have improved this)

This is not typical of most of the rest of NSTAR (except downtown Boston), nor the rest of the United States (except original downtown areas). This is because the typical suburban system has these attributes instead:

- Over half of the system is overhead,
- Most of the underground miles are radial underground residential distribution (URD), with solid-dielectric, direct-buried cable,
- Primary voltages are mostly 15kV-class, with some 25kV or 35kV-class, the latter being used mainly for long rural feeders or for sub-transmission feeders
- Extensive use of fuses and in-line reclosers for fault isolation and restoration

Early urban systems have advantages and disadvantages with respect to reliability. One advantage is that the customers served by secondary networks (nine percent in Cambridge) generally have excellent reliability because secondary networks are, like any network, inherently more reliable than comparable radial systems. Another advantage is that 4kV overhead conductor tends to be more resilient to many of the common causes of overhead faults – trees, animals, wind – because the voltage gradient is lower and therefore is less likely to pass through the naturally occurring amount of resistance in wood, fur, air, etc.

Some of the disadvantages of early urban systems with respect to reliability are that the 4kV system may be vulnerable to loss of supply – the power transformers and switches in the 'substations' that supply the 4kV feeders. Also, to some extent, the 4kV wire may be old, annealed copper, small diameter, often-spliced, with perhaps open wire secondary.

Another disadvantage of early urban systems is that when they do fault, they tend to take down the whole feeder, and restoration may take longer because of the difficulty of finding the fault in underground cable or in unfused overhead feeders without fault direction indicators or smart relays. (Likewise, when a secondary network system does fail, restoration can be quite lengthy as the operator tries to bring the network back up). In such systems, you expect to see a low SAIFI but a somewhat higher CAIDI. Historically, the Cambridge system has tended to have a lower SAIFI and a higher CAIDI than the Boston Edison and Commonwealth systems.

This discussion of the nature of the Cambridge system will be useful in considering the validity of the historical data on the system from 1997-2001, the period of the Service Quality benchmark.

Alternative Approach to Adjustment of Cambridge Data

In DTE 05-85, the following statement is made:

"According to the Settlement, Cambridge does not have monthly SAIDI and SAIFI data available for ten of the months during the period from 1995 through 2005 (Settlement at § 2.27). As part of the audit, the auditor shall assist in the establishment of proxy data for these months (id.)."

Reviewing the monthly SAIDI and SAIFI data for Cambridge Electric Company from 1995 through 2005, there are ten months that stand out as particularly out of pattern. These are:

Table 1 – Months Needing Proxy Data

Month	Customers Interrupted	Customer Outage Hours
Aug-95	7	19
Feb-98	13	22
Apr-98	6	5
Aug-99	0	0
Mar-01	0	0
Nov-01	6	26
Jan-03	0	0
Jun-04	4	3
Oct-04	1	0.4
Dec-04	0	0

There are four other months that also are somewhat out of pattern, but the number of customers interrupted in these months ranges from 21 to 38, whereas the ten noted above all have less than 15 customers interrupted.

A reasonable approach to 'establishing proxy data for these months' would be to replace each month with an average value for that month, since there is a seasonal pattern to the data. Table 2 shows the average value for each month, both with and without exclusion of the 10 months requiring adjustment. Note that there is no adjustment in the months of May, July, and September because none of those months require proxy data.

Table 2 – Monthly Averages, 1995-2005

	Customers Interrupted		Customer Outage Hours	
Month	Original Data	Excluding 10 months	Original Data	Excluding 10 months
January	2,162	2,379	4,920	5,412
February	1,636	1,798	2,870	3,155
March	997	1,097	1,828	2,011
April	1,907	2,097	2,141	2,355
May	2,435	2,435	2,282	2,282
June	2,980	3,278	5,218	5,739
July	3,177	3,177	4,447	4,447
August	3,230	3,947	3,893	4,756
September	3,355	3,355	5,476	5,476
October	1,718	1,890	2,253	2,479
November	2,076	2,283	2,278	2,503
December	3,117	3,429	3,561	3,917

When the appropriate proxies are substituted for the ten months in question, a revised data set is obtained. The impact on SAIDI and SAIFI is shown in Table 3. Note that no adjustment takes place in years 1996, 1997, 2000, 2002, and 2005, because none of the ten months requiring proxy data were in those years.

Table 3 – Adjusted SAIDI and SAIFI, 1995-2005

	SAIFI		SAIDI	
Month	Original Data	Adjusted 10 months	Original Data	Adjusted 10 months
1995	0.60	0.81	66.8	86.6
1996	0.72	0.72	52.8	52.8
1997	0.54	0.54	62.3	62.3
1998	0.71	0.81	66.2	74.8
1999	0.82	1.01	40.8	59.6
2000	0.50	0.50	37.2	37.2
2001	0.66	0.74	37.3	44.0
2002	0.70	0.70	66.1	66.1
2003	0.46	0.51	48.2	55.1
2004	0.62	0.80	49.3	64.6
2005	0.75	0.75	78.9	78.9

As regards the benchmark period, 1997 through 2001, the impact of the adjustments is shown in Table 4. Substitution of average monthly values for the ten months in question (only five of which were in the period 1997 through 2001) raised the upper limit for SAIFI by .16 and for SAIDI by 7.56 minutes.

Table 4 – Impact of Benchmark Adjustment Based on 1999-2001

	SAIFI		SAIDI	
	Original Data	Adjusted 10 months	Original Data	Adjusted 10 months
Average	0.64	0.72	48.76	55.58
Std. Dev.	0.13	0.21	14.29	15.03
Limit	0.77	0.93	63.05	70.61

Note that the settlement suggests that for the 2006 benchmarks, "The updated SAIDI/SAIFI benchmarks will be based on the most recent 10 years of historical data (1996 – 2005)". If this ten-year period is used instead to calculate the benchmarks, then the data in Table 5 would represent the new benchmarks.

Table 5 –Benchmark Based on Revised Data for 1996-2005

	SAIFI	SAIDI
Average	0.71	59.54
Std. Dev.	0.16	12.87
Limit	0.87	72.41

Conclusion

For the ten months that were cited as warranting adjustment, replacement of the customers interrupted and customer minutes of interruption for those months with average values for those months results in values for SAIDI and SAIFI that better represent an appropriate benchmark of performance for the Cambridge Electric Light Company according to the terms of the settlement.